

Application Number 10/693,011
Amendment Responsive to the Office Action mailed May 9, 2008

REMARKS

This Amendment is responsive to the Office Action dated May 9, 2008. Applicant has added new claims 35 and 36 to the pending application. Support for claims 35 and 36 may be found throughout Applicant's originally filed application, including, for example, paragraph [0121].

Upon entry of this Amendment, claims 1-10, 21, and 23-36 are pending. In view of the following remarks, Applicant respectfully requests reconsideration and withdrawal of the rejection of the claims presented in the Office Action.

Claim Rejection Under 35 U.S.C. § 103(a)

In the Office Action, claims 1-4 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McCleary et al. (U.S. Patent No. 6,622,031, hereafter McCleary) in view of Maoz et al. (U.S. Patent Application Publication No. 2004/0125029, hereafter Maoz).

In addition, claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McCleary in view of Maoz as applied to claim 1 above, and further in view of Stein et al. (U.S. Patent Application Publication No. 2004/0230246, hereafter Stein); claims 5-8, 23-29, and 32-34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McCleary in view of Maoz as applied to claim 1 above, and further in view of Carburaru et al. (U.S. Patent Application Publication No. 2004/0098068, hereafter Carburaru); and claims 30 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McCleary in view of Maoz in view of Carburaru as applied to claim 23 above, and further in view of Stein.

Applicant respectfully traverses the rejection of the claims. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the claimed invention.

Claims 1-10 and 21

Independent Claim 1

With reference to independent claim 1, for example, the applied references lack any teaching that would have suggested a programmer for an implantable medical device, the programmer comprising a programmer housing, an internal antenna mounted on a first circuit

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board within the programmer housing, and a display device mounted on a second circuit board within the programmer housing, where the first circuit board includes a substantially contiguous ground plane layer interrupted by a plurality of gaps.

In support of the rejection of claim 1 over McCleary in view of Maoz, the Office Action asserted that McCleary discloses a programmer for an implanted medical device, and characterized the printed circuit (PC) board 225 of McCleary as an antenna driver circuit board on which an antenna is mounted.¹ The Office Action further characterized a screen 105 of McCleary as "a display screen on a graphics circuit."² The Office Action acknowledged that McCleary does not disclose an internal antenna or a circuit board including a substantially contiguous ground plane layer interrupted by a plurality of gaps.³ The Office Action looked to Maoz to overcome the deficiencies in the McCleary reference. In particular, the Office Action asserted that Maoz discloses an internal antenna, a ground plane layer, a plurality of gaps, and a display on a separate circuit board.⁴ The Office Action concluded that it would have been obvious to modify the device disclosed by McCleary with the "internal antenna and gaps on the circuit board that is separate from the display circuit as taught by Maoz, since such modification would provide the predictable result of a programmer with an internal antenna and a ground plane layer that is disrupted by gaps for providing increased power without internal noise."⁵

Applicant respectfully disagrees that McCleary in view of Maoz discloses each and every element of claim 1. As an initial matter, Applicant disagrees that McCleary discloses a medical device programmer. While McCleary discloses a handheld wireless device, McCleary fails to disclose or even suggest that its handheld wireless device may be used to program a medical device. Accordingly, contrary to the Office Action's assertions, McCleary does not disclose or suggest a medical device programmer. In addition, neither McCleary nor Maoz discloses or suggests a programmer including an internal antenna mounted on a first circuit board within a programmer housing and a display device mounted on a second circuit board within the programmer housing, as required by Applicant's claim 1.

¹ Office Action dated May 9, 2008, p. 2, l. 25.

² Office Action dated May 9, 2008, p. 3, l. 1.

³ Office Action dated May 9, 2008, p. 3, ll. 1-4.

⁴ Office Action dated May 9, 2008, p. 3, ll. 5-6.

⁵ Office Action dated May 9, 2008, p. 3, ll. 8-12.

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McCleary is generally directed to an antenna configuration for a handheld wireless device.⁶ According to McCleary, the antenna is located in “an unobtrusive and protected location”⁷ behind a stylus and “automatically pivots to the position in which it protrudes from the device housing”⁸ when the stylus is removed. To accomplish this, McCleary discloses that one end of the antenna is “pivotably attached to the housing”⁹ of the wireless device. This allows the antenna to pivot from its protected position to the position at which it protrudes from the housing. McCleary fails to disclose or suggest any other mounting location for the antenna and, as acknowledged by the Office Action, McCleary fails to disclose an internal antenna. Accordingly, McCleary does not disclose or suggest an internal antenna mounted on a first circuit board that is different from a second circuit board on which a display device is mounted.

Even if the antenna 85 of the McCleary device is mounted to the PC board 225, as suggested by the Office Action, McCleary still fails to disclose or suggest an internal antenna and a display device that are mounted on separate circuit boards. The Office Action appears to be suggesting that McCleary discloses an antenna 85 that is mounted on a PC board 225 and a flat panel display 105 that is mounted on a graphics circuit, and, therefore, discloses an antenna and a display device that are mounted on separate circuit boards. However, McCleary fails to disclose a “graphics circuit.” The Office Action offers no support for the assertion that McCleary discloses that the display 105 is mounted to a “graphics circuit” that is different than the PC board 225.

McCleary provides absolutely no disclosure or suggestion that the flat panel display 105 and the antenna 85 are mounted to separate circuit boards. Instead, McCleary discloses that the flat panel display 105 and the antenna 85 are mounted to the same circuit board. For example, McCleary discloses that the flat panel display 105 (also referred to as a display device 105 or a display screen 105) is coupled to a bus 110 on a PC board 225, i.e., the same PC board 225 that the Office Action asserted the antenna 85 is mounted on. McCleary also discloses that the bus

⁶ McCleary, Abstract.

⁷ McCleary, col. 2, ll. 6–7.

⁸ McCleary, col. 2, ll. 22–23.

⁹ McCleary, col. 2, l. 19.

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110 couples to a signal transmitter/receiver device 108, which is coupled to the antenna 85.¹⁰ This further supports the conclusion that the flat panel display 105 in the McCleary device is electrically connected to the same PC board 225 as the antenna 85, rather than a separate "graphics circuit" as alleged in the Office Action. For at least these reasons, McCleary fails to disclose or suggest an internal antenna mounted on a first circuit board within the programmer housing and a display device mounted on a second circuit board within the programmer housing, as required by Applicant's claim 1.

Maoz fails to overcome these deficiencies of McCleary. Maoz is generally directed to a mobile communication apparatus including an electrically-conductive reflector that enlarges the ground of a printed wire board to load an antenna and increase the efficiency and/or widen a radio frequency band of the antenna.¹¹ Maoz discloses that the antenna may be carried by a printed wire board¹² or a housing of the apparatus¹³ and is electrically connected to the printed wire board.¹⁴ According to Maoz, the printed wire board may include stub reflectors, which are defined by slots cut in a conductive layer that defines a ground plane.¹⁵

The Office Action acknowledged that Maoz fails to explicitly disclose a display, but asserted that "figure 1 clearly shows a display on circuit board (4) that is separate from internal antenna (10)."¹⁶ Thus, the Office Action seems to indicate that Applicant's claimed internal antenna and display device arrangement would be anticipated by a device that includes a display on a circuit board that is separate from an internal antenna. However, the proper inquiry is not whether Maoz discloses a display that is separate from an internal antenna, but whether Maoz discloses an internal antenna and a display device that are mounted on separate circuit boards. In particular, Applicant's claim 1 requires an internal antenna mounted on a first circuit board and a display device mounted on a second circuit board.

Maoz fails to disclose or suggest that the internal antenna 10 and a display device are mounted on separate circuit boards. The Office Action characterized the printed wire board 4 in

¹⁰ McCleary, col. 5, ll. 42-45; col. 6, ll. 1-6.

¹¹ Maoz, para. [0010].

¹² Maoz, para. [0038].

¹³ Maoz, para. [0010].

¹⁴ Maoz, para. [0010].

¹⁵ Maoz, para. [0043].

¹⁶ Office Action dated May 9, 2008, p. 3, ll. 14-15.

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Maoz as a circuit board on which a display is mounted.¹⁷ The Office Action, however, did not provide any support for the conclusion that the internal antenna 10 in Maoz is mounted on a circuit board other than the printed wire board 4. Maoz discloses that the internal antenna 10 is mounted on the printed wire board 4, i.e., the "display" circuit board, as characterized by the Office Action. For example, Maoz discloses that an internal antenna 10 is electrically connected to printed wire board (PWB) 4,¹⁸ and is carried by the printed wire board 4.¹⁹ Thus, according to Maoz, the internal antenna 10 and display are carried by the same PWB 4. Accordingly, Maoz does not disclose or suggest an internal antenna mounted on a first circuit board and a display device mounted on a second circuit board, as required by independent claim 1.

Even assuming the internal antenna 10 disclosed by Maoz is mounted on a circuit board other than the PWB 4, an assertion with which Applicant disagrees, Maoz nevertheless fails to disclose or suggest that the circuit board on which the internal antenna is mounted includes a substantially contiguous ground plane layer interrupted by a plurality of gaps. The Office Action characterized the slots 53a and 53b in the conductive layer 51 of the Maoz printed wire board 4 as a plurality of gaps.²⁰ However, Applicant's claim 1 requires that the circuit board on which the antenna is mounted includes the plurality of gaps. In contrast, the slots 53a and 53b in Maoz are in a layer of PWB 4²¹, i.e., the display circuit board according to the Office Action. According to the Office Action's interpretation of Maoz, i.e., that the antenna 10 is mounted on a circuit board other than PWB 4, Maoz neither discloses nor suggests that the circuit board on which antenna 10 is mounted includes a plurality of gaps. In contrast, claim 1 requires the internal antenna to be mounted on a first circuit board that includes a substantially contiguous ground plane layer interrupted by a plurality of gaps.

It is unclear why one of ordinary skill in the art would have looked to Maoz to modify the McCleary device. As the Office Action recognized, McCleary does not disclose or suggest an internal antenna. In fact, McCleary requires an external antenna that pivots from a position behind a stylus to a "position in which [the antenna] protrudes from the device housing."²²

¹⁷ Office Action dated May 9, 2008, p. 3, l. 6.

¹⁸ Maoz at para. [0010].

¹⁹ Maoz at para. [0038].

²⁰ Office Action dated May 9, 2008, p. 3, ll. 5-6.

²¹ Maoz, para. [0043].

²² McCleary, col. 2, ll. 22-23.

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Accordingly, modification of the McCleary device to include an internal antenna would render the McCleary device unsatisfactory for its intended purpose, which is impermissible.²³ McCleary states repeatedly that the invention of the McCleary reference relates to "an antenna configuration for storing and deploying an antenna."²⁴ McCleary also discloses repeatedly that the antenna configuration comprises a "pivotable antenna."²⁵ Consequently, one of ordinary skill would not have modified the McCleary device to include an internal antenna.

The Office Action does not provide an apparent reason why one skilled in the art would have modified the McCleary device to include an internal antenna. To the extent the Office Action offers a reason, the Office Action states that "[i]t would have been obvious to one having ordinary skill in the art . . . to modify the programmer as taught by McCleary, with programmer with an internal antenna . . . since such a modification would provide the predictable result of a programmer with an internal antenna."²⁶ Applicant respectfully submits that this proposed reason fails to amount to a clear articulation of the reasons why one having ordinary skill in the art would have modified McCleary to include an internal antenna. Instead, the reason for modifying McCleary offered by the Office Action is merely conclusory, which is insufficient to support an obviousness rejection.²⁷

Dependent Claims 2-10, 21 and 33

Claims 2-10, 21 and 33 depend from claim 1 and, accordingly, are allowable over the cited art for at least the reasons given above with respect to claim 1. Claims 2-10, 21 and 33 also recite additional elements that are neither disclosed nor suggested by the cited references. Applicant addresses some of the dependent claims below for purposes of illustration.

The Office Action rejected claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over McCleary in view of Maoz as applied to claim 1 above, and further in view of Carburaru. According to claim 5, the first circuit board of claim 1 includes an electrostatic discharge layer defining a peripheral conductive layer and a central aperture. In support of the rejection of claim 5, the Office Action asserted that Carburaru discloses that printed circuit boards utilized in

²³ See MPEP 2143.01.

²⁴ See, e.g., McCleary, Abstract and col. 2, ll. 13-14.

²⁵ See, e.g., McCleary, col. 2, ll. 17-19; col. 4, ll. 59-61; col. 8, ll. 4-5; claims 1, 7 and 13.

²⁶ Office Action dated May 9, 2008, p. 3, ll. 6-12.

²⁷ See MPEP 2141.

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medical devices may contain electrostatic discharge layers built into them.²⁸ The Office Action concluded that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the circuit board of McCleary in view of Maoz with a printed circuit board with a static discharge layer as taught by Carbutaru since it would have provided the device with a protection circuit to prevent circuit failure due to electrostatic discharge.²⁹

Applicant respectfully disagrees with the Office Action's conclusion of obviousness. Carbutaru makes a single statement regarding electrostatic discharge circuits. Namely, at paragraph [0070], Carbutaru describes FIG. 3A and states, "[a]dditionally, the [printed circuit board] may contain electrostatic discharge (ESD) protection circuits 471, 472, 473, and 474 that are only active when electrostatic discharge is present." Carbutaru provides no further details regarding the construction or implementation of the electrostatic discharge circuits. For example, Carbutaru fails to disclose or suggest that the electrostatic discharge circuits are electrostatic discharge layers defining a peripheral conductive layer and a central aperture, as required by Applicant's claim 5.

As recognized in Applicant's disclosure, a medical device programmer including a circuit board that includes an electrostatic discharge layer defining a peripheral conductive layer and a central aperture may provide advantages. For example, this arrangement may substantially reduce the electromagnetic load to the magnetic circuit of antenna.³⁰ Carbutaru fails to consider or appreciate the advantages of this arrangement and provides no disclosure or suggestion that this arrangement is desirable. Carbutaru only shows its electrostatic discharge circuits in FIG. 3A, which is a "schematic diagram representing the electrical circuitry of the chair pad."

Applicant further notes that the Office Action appears to have disregarded the limitations of claim 5 that require the electrostatic discharge layer to define a peripheral conductive layer and a central aperture. The Office Action simply concluded, "[s]ince the layers are throughout the entire circuit board then it would be obvious that the electrostatic discharge layer would be the approximate size and shape of the antenna."³¹ The mere fact that the layers are allegedly

²⁸ Office Action dated May 9, 2008, p. 4, l. 22 to p. 5, l. 1.

²⁹ *Id.* at p. 5, l. 3-7.

³⁰ See, e.g., Applicant's originally filed application, para. [0137].

³¹ Office Action dated May 9, 2008, p. 5, l. 7-9.

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"throughout the entire circuit board," an assertion that finds no support in the teachings of Carburaru, neither discloses nor suggests an electrostatic discharge layer that defines a peripheral conductive layer and a central aperture. In fact, if the layers are "throughout the entire circuit board," as alleged in the Office Action, this seems to suggest that the electrostatic discharge layer would not define a peripheral conductive layer and a central aperture. The Office Action has completely failed to demonstrate how the cited references disclose or suggest the claimed electrostatic discharge layer.

Claim 6 depends from claim 5 and specifies that the internal antenna of claim 1 defines an aperture, and that the central aperture of the ESD layer substantially approximates the size and shape of the aperture of the internal antenna. With respect to the rejection of claim 6, the Office Action again relied on the assertion that "since the layers are throughout the entire circuit board then it would be obvious that the electrostatic discharge layer would be the approximate size and shape of the antenna."³² Applicant respectfully disagrees. Even if the electrostatic discharge protection circuits in Carburaru are "throughout the entire circuit board," as proposed by the Office Action, an assertion with which Applicant disagrees, the Office Action offers absolutely no support for the assertion that the electrostatic discharge circuits define a central aperture or that the central aperture of the electrostatic discharge circuits substantially approximates a size and shape of the antenna aperture, as required by claim 6.

The cited references fail to disclose or suggest that an internal antenna of a medical device programmer has substantially the same size and shape as a circuit board on which the antenna is mounted. In addition, Carburaru does not contemplate application of its electrostatic discharge protection circuits to a circuit board on which an internal antenna is mounted. Thus, it is unclear how electrostatic discharge layers that are "throughout the entire circuit board" would necessarily approximate the size and shape of the antenna, as suggested by the Office Action.

Claim 7 depends from claim 5 and further specifies that the electrostatic discharge layer is a first electrostatic discharge layer formed on a first side of the ground plane layer, and the programmer further comprises a second electrostatic discharge layer formed on second side of the ground plane layer. In support of the rejection of claim 7, the Office Action reasoned that "[i]t would have been an obvious matter of design choice" to modify the circuit board in

³² Office Action dated May 9, 2008, p. 5, l. 7-9.

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McCleary in view of Maoz in further view of Carburaru "with dual layers of electrostatic discharge, because Applicant has not disclosed that dual layers provides an advantage, is used for a particular purpose, or solve a stated problem."³³ The Office Action also reasoned that "[o]ne of ordinary skill in the art . . . would have expected Applicant's invention to perform equally well with a single layer as taught by McCleary in view of Maoz and further in view of Carburaru."

If the Office Action is relying on an assertion of equivalence to support the obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on Applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. Applicant respectfully requests the Office Action to provide evidence to support the assertion of equivalence or withdraw the rejection of claim 7.

As the Office Action appears to have recognized, the cited art fails to teach or suggest a first electrostatic discharge layer formed on a first side of the ground plane layer, and a second electrostatic discharge layer formed on second side of the ground plane layer, as recited by claim 7. While the Office Action relies on "design choice" to support the rejection of claim 7, which Applicant disagrees with, the Office Action has failed to address how the prior art discloses or suggest an electrostatic discharge layer on a ground plane layer. Nothing in the cited references even teaches or suggests placing an electrostatic discharge layer on a ground plane layer.

In the previous Amendment, dated January 15, 2008, Applicant added new claim 33, which requires that the first circuit board and the second circuit board occupy different planes that are displaced from one another. Claim 33 further requires that the internal antenna is mounted on a first side of the first circuit board and the display device is mounted on a second side of the second circuit board facing away from the first circuit board. The Office Action listed claim 33 as being rejected over McCleary in view of Maoz as applied to claim 1 above, and further in view of Carburaru. However, the Office Action failed to address which of the cited references teach the requirements of Applicant's claim 33.

As provided in 37 C.F.R. 1.104(c)(2), the Examiner must designate the particular part of a reference as nearly as practicable. However, with respect to claim 33, as well as claim 34, the Examiner has failed to do so. The Office Action does not explain how McCleary in view of Maoz in further view of Carburaru discloses the first and second circuit boards of Applicant's

³³ *Id.*

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claim 33. Thus, on at least the basis that the Office Action failed to meet the burden of demonstrating that McCleary in view of Maoz in further view of Carbunaru discloses each and every element of claim 33, Applicant respectfully requests clarification of the rejection of claim 33 or withdrawal of the rejection.

As discussed above with respect to claim 1, neither McCleary nor Maoz discloses or suggests an internal antenna mounted on a first circuit board and a display device mounted on a second circuit board. Carbunaru fails provide any teaching that overcomes the deficiencies of McCleary in view of Maoz. Applicant respectfully requests the Office Action to address the requirements of claims 33 (and similarly, claim 34) in further detail in the next communication, so that Applicant has an opportunity to respond to the rejection.

For at least these reasons, the Office Action has failed to establish a prima facie case for non-patentability of Applicant's claims 1-10, 21, and 33 under 35 U.S.C. § 103(a). Reconsideration and withdrawal of the rejection of claims 1-10, 21, and 33 under 35 U.S.C. § 103(a) is respectfully requested.

Claims 23-32 and 34

Independent claim 23 is directed to a programmer for an implantable medical device. The programmer includes an internal antenna mounted on a first circuit board within a programmer housing, where the internal antenna has a loop-like structure and defines a first aperture, and the first circuit board includes at least one signal plane with an electrostatic discharge layer defining a second aperture in substantially overlapping alignment with the first aperture. The programmer of independent claim 23 further includes a display device mounted on a second circuit board within the programmer housing. Additionally, the first circuit board includes a substantially contiguous ground plane layer interrupted by a plurality of gaps.

For similar reasons described above with respect to claims 1 and 5, the cited references fail to teach or suggest each and every element of independent claim 23. Claims 24-32 and 34 depend from claim 23, and are in condition for allowance for at least the reasons described above with respect to claims 1 and 5. For at least these reasons, the Office Action has failed to establish a prima facie case for non-patentability of Applicant's claim 23-32 and 34 under 35

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U.S.C. § 103(a). Reconsideration and withdrawal of the rejection of claims 23–32 and 34 is respectfully requested.

New Claims

Applicant has added claims 35 and 36 to the pending application. The applied references fail to disclose or suggest the inventions defined by Applicant's new claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed inventions. As one example, the reference fail to disclose or suggest a programmer that comprises analog electronics and digital electronics, where a first majority of the analog electronics is placed on a first circuit board on which an internal antenna is mounted, and a second majority of the digital electronics is placed on a second circuit board on which a display device is mounted, as required by Applicant's claim 35. No new matter has been added by the new claims. As previously stated, support for claims 35 and 36 may be found throughout Applicant's originally filed application, including, for example, paragraph [0121].

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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